Environment & Ecology · GS - III

The birth of four cubs to a Botswana-origin cheetah at Kuno National Park highlights the importance of successful breeding in species reintroduction programmes. Discuss the ecological and genetic factors that determine the long-term viability of reintroduced populations.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 20/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Genetic diversity, founder population, inbreeding depression, reproductive success, habitat carrying capacity, prey availability, disease management, metapopulation, wildlife corridors, adaptive conservation.

Model Answer

Introduction

The reported birth of four cubs to a Botswana-origin cheetah at Kuno National Park, taking India's cheetah population to 62, represents an important development in Project Cheetah. However, successful reproduction must translate into a genetically and ecologically viable population.

Factors Determining Long-term Viability

1. **Genetic diversity:** A sufficiently diverse founder population reduces the risk of inbreeding and genetic disorders.

2. **Reproductive success:** Survival of cubs and their eventual contribution to breeding are essential for population growth.
3. **Habitat carrying capacity:** Adequate space, water and prey availability determine how many animals an ecosystem can sustainably support.
4. **Disease management:** Veterinary surveillance and disease prevention reduce mortality risks.
5. **Metapopulation approach:** Multiple connected populations improve resilience against local extinction.
6. **Landscape connectivity:** Wildlife corridors facilitate dispersal and genetic exchange between habitats.

Conservation Priorities

- Maintain scientific records of breeding, mortality and genetic health.
- Strengthen habitat restoration and prey-base management.
- Monitor human-wildlife conflict and involve local communities.
- Develop additional suitable habitats to reduce pressure on individual protected areas.

Conclusion

The success of Project Cheetah should be assessed through long-term survival, natural breeding, genetic health and ecological adaptation. Population growth is an encouraging milestone, but a self-sustaining wild population remains the central conservation objective.

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